

Claims

1. A knee brace to be worn by a person for unloading pressure to the
5 person's knee having first and second knee compartments comprising:

an upper leg support and a lower leg support;

a hinge connecting the upper and lower leg supports along a hinge side,
10 the hinge positionable proximate the first knee compartment for permitting flexion
and extension knee movement of the wearer's knee;

a first knee strap having first and second end portions, the first end portion
of the first knee strap attachable to the upper leg support, the first knee strap
15 adapted to extend above the knee and wrap around the back of the knee, the
second end of the first knee strap attachable to the lower leg support; and

a second knee strap having first and second end portions, the first end
portion of the second knee strap attachable to the lower leg support, the second
20 knee strap adapted to extend under the kneecap and wrap around the back of
the knee, the second end portion of the second knee strap attachable to the
upper leg support, said first and second knee straps for crossing proximate the
second knee compartment and providing a corrective unloading force to the first
knee compartment of the leg of a person wearing the knee brace.

2. The device of claim 1 wherein the first knee compartment does not contact the knee brace.

5 3. The device of claim 1 further comprising means for aligning the hinge mechanism with the person's forward progression.

4. The device of claim 1 wherein the first knee compartment is selected from the group consisting of the medial knee compartment and the
10 lateral knee compartment.

5. The device of claim 1 wherein the hinge further comprises means for restricting flexion and extension movement.

15 6. A knee brace to be worn by a person for unloading pressure to the person's knee having first and second knee compartments comprising:

an upper leg support;

20 a lower leg support having an upper arm and a lower arm pivotally attached to the upper arm by a pivot joint for permitting selective adjustment in the coronal plane of the lower arm relative the upper arm when the brace is applied to the person's leg;

a hinge connecting the upper and lower leg supports along a hinge side, the hinge positionable proximate the first knee compartment for permitting flexion and extension knee movement of the wearer's knee; and

5 a knee strap having first and second end portions, the first end portion attached to the upper leg support, the knee strap adapted to extend around the knee and attach to the lower leg support, for providing a varus/valgus correction to the person's knee when normally worn by a person.

10 7. The device of claim 6 wherein the brace applies a corrective unloading force to the person's first knee compartment.

8. The device of claim 6 wherein the pivot joint further comprises opposing intermeshing teeth.

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9. The device of claim 6 wherein the first knee compartment is selected from the group consisting of the medial knee compartment and the lateral knee compartment.

20 10. The device of claim 7 further comprising a second knee strap having first and second end portions, the first end portion of the second knee strap attachable to the lower leg support, the second knee strap adapted to extend around the knee, and attach to the upper leg support, the first and second

knee straps positionable to cross proximate the second knee compartment when the device is normally worn by a person.

11. The device of claim 6 wherein the upper leg support further
5 comprises an upper leg cuff pivotally attached to an upper elongated member to permit rotational adjustment of the upper leg cuff relative to the upper elongated member and the lower arm further comprises a lower leg cuff pivotally attached to a lower elongated member to permit rotational adjustment of the lower leg cuff relative to the lower elongated member.

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12. The device of claim 11 wherein the hinge mechanism is aligned with the person's forward progression by adjusting the upper and lower leg cuffs relative to the respective upper and lower elongated members.

13. A knee brace to be worn by a person for encouraging proper
15 alignment of the leg comprising:

an upper leg support having an upper elongated member pivotally
attached to an upper leg cuff permitting rotational adjustment of the leg cuff
20 relative to the upper elongated member;

a lower leg support having an elongated member pivotally attached to a lower leg cuff permitting rotational adjustment of the lower leg cuff relative to the lower elongated member;

a hinge mechanism connecting the upper and lower leg supports along a hinge side, the hinge mechanism positionable proximate a first knee compartment for permitting flexion and extension knee movement of the wearer's knee; and

a knee strap having first and second end portions, the first end portion of the knee strap attachable to the upper leg support, the knee strap adapted to extend around the knee, the second end portion of the knee strap attachable to the lower leg support, wherein the brace provides a corrective unloading force to the first knee compartment and the hinge mechanism is aligned with the person's forward progression.

14. The device of claim 13 further comprising a slot extending along a portion of the upper elongated member for adjustably positioning the upper leg support along the length of the upper elongated member and a slot extending along a portion of the lower elongated member for adjustably positioning the lower leg support along the length of the lower elongated member.

15. The device of claim 13 wherein the upper leg cuff and the lower leg cuff further comprise a skin adhesion layer.

16. The device of claim 15 where the skin adhesion layer is a silicone material.

17. A method of applying a corrective unloading force to first and second knee compartments of a person by applying a knee brace to the person's leg, the knee brace having an upper leg support, a lower leg support and a hinge mechanism pivotally connecting the upper and lower leg supports along a hinge side, the method comprising:

positioning the brace so that the hinge mechanism is proximate the first knee compartment;

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extending a first knee strap from the upper leg support along the top of the knee and around the back of the knee to the lower leg support; and

extending a second knee strap from the lower leg support along the bottom of the knee and around the back of the knee to the upper leg support, the second knee strap crossing the first knee strap proximate the second knee compartment.

18. A method of applying a corrective unloading force to a knee compartment of a person and a varus/valgus correction to the leg of the person by applying a knee brace to the person's leg, the knee brace having an upper leg support, a lower leg support having an upper arm pivotally attached to a lower arm, and a hinge mechanism connecting the upper leg support and the lower leg

support along a hinge side of the brace, the hinge mechanism permitting flexion and extension knee movement, the method comprising:

5 positioning the brace so that the hinge is proximate the knee compartment;

adjusting the lower arm relative the upper arm to provide a desired angular position between the upper and lower arms; and

10 extending a first knee strap from the upper leg support around the knee to the lower leg support.

19. A method of applying a corrective unloading force to a knee compartment of a person by applying a knee brace to the leg of the person, the knee brace having an upper elongated member pivotally attached to an upper leg cuff, a lower elongated member pivotally attached to a lower leg cuff, and a hinge mechanism attaching the upper elongated member to the lower elongated member along a hinge side to permit flexion and extension movement of the person's knee, the method comprising:

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20 positioning the brace so that the hinge is proximate the knee compartment;

aligning the hinge mechanism with the person's forward progression by rotationally positioning the upper leg cuff relative the upper elongated member and the lower leg cuff relative the lower elongated member; and

extending a first knee strap from the upper leg support around knee to the lower leg support.

- 5 20. A method for encouraging the proper alignment of a leg of a person by applying a knee brace to the person's leg, the knee brace having an upper elongated member pivotally attached to an upper leg cuff, a lower elongated member pivotally attached to a lower leg cuff, and a hinge mechanism attaching the upper elongated member to the lower elongated member along a hinge side
- 10 to permit flexion and extension movement of the person's knee, the lower elongated member having an upper arm pivotally attached to a lower arm, the method comprising:

- positioning the brace so that the hinge is proximate a first knee
- 15 compartment of the person's knee;

 adjusting the lower arm relative the upper arm to provide a desired angular position between the upper and lower arms;

- 20 aligning the hinge mechanism with the person's forward progression by rotationally positioning the upper leg cuff relative the upper elongated member and the lower leg cuff relative the lower elongated member; and

extending a first knee strap from the upper leg support around the knee to the lower leg support.